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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/797,044	03/11/2004	Hitoshi Arita	250163US0DIV	4648
22850	7590	10/22/2004	EXAMINER SHAH, MANISH S	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			ART UNIT 2853	
PAPER NUMBER				

DATE MAILED: 10/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/797,044

Applicant(s)

ARITA ET AL.

Examiner

Manish S. Shah

Art Unit

2853

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03/11/2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 19-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 19-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 10/050,942.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 03/11/06/09/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 19-20 & 24-29 are rejected under 35 U.S.C. 102(e) as being anticipated by Yano et al. (# US 6460989).

Yano et al. discloses an ink jet recording method including, discharging an ink (liquid composition) from a nozzle of a recording head containing the ink in an ink room to form an ink image on a recording material (column: 27, line: 5-40), wherein the recording head includes the nozzle (figure: 3, 6); the room containing the ink to be discharged (figure: 5); an ink flow regulating portion regulating flow of the ink (figure: 3-6); a vibrating plate vibrating to discharge the ink from nozzle (column: 29, line: 45-55), and wherein the ink includes a colorant, and a solvent (column: 19, line: 40-47). wherein a zeta potential (anionic liquid composition) between the colorant and any one or more of the materials constituting the nozzle is from -5 to -90 mV at a pH of from 7 to 12 (column: 16, line: 55-65). They also disclose that the each of the material constituting the nozzle, the ink room, the ink flow-regulating portion and the vibrating plate is a

material selected from silica, a glass and a silicon oxide (column: 27, line: 50-56). They also disclose that the colorant includes a cationic colorant or a colored covered with resin, wherein the cationic colorant is selected from the group consisting of a cationic dye, a cationic carbon black and a cationic pigment (column: 23, line: 53 to column: 24, line: 66; column: 25, line: 15-25). They also disclose that the ink further includes a viscosity controller, a pH controller, an antiseptic, and a corrosion inhibitor (antioxidant), which is selected from the cationic resin and the cationic surfactant (column: 23, line: 60-67; column: 24, line: 14-20).

2. Claims 36-39 & 43-44 are rejected under 35 U.S.C. 102(e) as being anticipated by Yano et al. (# US 6460989).

Yano et al. discloses an ink jet recording apparatus (figure: 4) including a recording head (figure: 6) and an ink cartridge (figure: 5), wherein the ink cartridge including an ink container; and the recording head (figure: 1-6; column: 27, line: 5-40), wherein the recording head includes the nozzle (figure: 3, 6); the room containing the ink to be discharged (figure: 5); an ink flow regulating portion regulating flow of ink (figure: 3-6); a vibrating plate vibrating to discharge the ink from nozzle (column: 29, line: 45-55), and wherein the ink includes a colorant, and a solvent (column: 19, line: 40-47), wherein a zeta potential (anionic liquid composition) between the colorant and any one or more of the material constituting the nozzle is from -5 to -90 mV at a pH of from 7 to 12 (column: 16, line: 55-65). They also disclose that the each of the material constituting the nozzle, the ink room, the ink flow-regulating portion and the vibrating plate is a material selected from silica, a glass and a silicon oxide (column: 27, line: 50-

56). They also disclose that the colorant includes a cationic colorant or a colored covered with a resin, wherein the cationic colorant is selected from the group consisting of the cationic dye, the cationic carbon black and the cationic pigment (column: 23, line: 53 to column: 24, line: 66; column: 25, line: 15-25). They also disclose that the ink further includes a viscosity controller, a pH controller, an antiseptic, a corrosion inhibitor (antioxidant), which is selected from the cationic resin and the cationic surfactant (column: 23, line: 60-67; column: 24, line: 14-20).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 21-23 & 40-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yano et al. (# US 6460989) in view of Yamamuro et al. (# US 4700203).

Yano et al. discloses all the limitation of the ink jet recording method except that (1) the material being crystal silicon, a polysilicone, a borosilicate glass and a photosensitive glass. (2) The ink room, the vibrating plate and the nozzle is formed by method selected from the etching treatment and the drilling treatment.

Yamamuro et al. teaches that to get the high quality print head, the material being crystal silicon, the polysilicone, and the photosensitive glass (column: 7, line: 45-

65). They also teaches that the ink room, the vibrating plate and the nozzle is formed by method selected from the etching treatment (column: 8, line: 60-68).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the recording head in the inkjet recording method and the apparatus of Yano et al. by the aforementioned teaching of Yamamuro et al. in order to have a high quality print head with minimum load act on substrate.

4. Claims 30-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yano et al. (# US 6460989) in view of Nagai et al. (# US 5882390).

Yano et al. discloses all the limitation of the ink jet recording method except that the corrosion inhibitor includes a cationic compound selected from the group consisting of ions having the formula 1 as shown in the attachment in an amount of from 0.05 to 5.0% by weight, preferably 0.1 to 2.0%, more preferably from 0.2 to 0.8% by weight.

Nagai et al. teaches that to improve the solubility stability, excellent preservation stability and ejection stability, ink composition including the corrosion inhibitor includes a cationic compound selected from the group consisting of ions having the formula 2 as shown in the attachment (column: 13, line: 50 to column: 14, line: 60; column: 18, line: 30-50), in an amount of from 0.05 to 10.0% by weight (column: 17, line: 55-60).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ink composition in the inkjet recording method of Yano et al. by the aforementioned teaching of Nagai et al. in order to have the ink with improved solubility stability, excellent preservation stability and ejection stability.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(1) Arita et al. (# US 2002/0083866) discloses an ink for ink jet recording, in which at least portion of member in contact with the ink is formed by any one of a borosilicate glass, a soda lime glass, a photosensitive glass, single crystal silicon (see Abstract).

(2) Gotoh et al. (# US 6578958) discloses an ink jet recording method and apparatus including plurality of nozzles for discharging ink drops to form an image on a receiving material (see Abstract). They also disclose that the ink composition have an absolute value of zeta potential at least 5 mV (column: 4, line: 20-30).


(3) Doi et al. (# US 6378999) discloses an aqueous ink jet recording liquid has the absolute value of zeta potential is 20 mV or more and -20 mV or less (column: 13, line: 35-50), and has a pH from 3 to 11 (column: 12, line: 20-30).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Manish S. Shah whose telephone number is (571) 272-2152. The examiner can normally be reached on 7:00am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Manish S. Shah
Examiner
Art Unit 2853


MSS
10/20/04